

NATURAL HISTORY

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The oceans unite all shores and bring the world more closely together. The expeditions of the American Museum have ranged over many seas and have enjoyed the aid and hospitality of maritime nations from the poles to the equator. To all of these the appreciation of the Museum is hereby extended.

JOURNAL OF THE AMERICAN
MUSEUM OF NATURAL HISTORY
EXPLORATION · RESEARCH · EDUCATION



A WARD OF GUADALUPE ISLAND

In 1922 the island of Guadalupe was declared a government reservation by the authorities of Mexico City, and it is to be hoped its elephant seal population will escape in the future the persecution to which it was subjected in the past

A Trip to Guadalupe, the Isle of My Boyhood Dreams¹

By LAURENCE M. HUEY

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NOTE.—The preceding paper, recording the visit of the "Albatross" to Guadalupe in 1911, will have whetted the reader's interest for an article dealing with the later history of the herd of sea elephants. The main purpose of the expedition of 1923 in which Mr. Huey participated was to take a census of these animals. They had then been enjoying government protection for about a year and their number had increased from 264—the total counted by members of the coöperative expedition in July, 1922,—to 366.

Since preparing the present article, Mr. Huey has again visited Guadalupe and spent the day of August 30, 1924, on the elephant seal beach. He writes that, at that time, the count showed but 124 animals, of which only 9 were large adults. The majority were of intermediate size and there were 6 yearlings. Whether the fluctuations in the beach census of the past three summers reflect with any accuracy the relative abundance of the total living elephant seals cannot, in the judgment of Mr. Huey, yet be determined. He feels that these facts depend upon a much greater knowledge of the movements, breeding habits, and food of the elephant seal than has as yet been secured.

IT had been a restless night despite the quiet sea and the even roll of the boat, for the long-hoped-for trip to Guadalupe, the island of my boyhood dreams, was really taking place. In the early gray of dawn, I was on the bridge peering into the west with the hope of seeing the dim outline of the enchanted isle. During my early boyhood, while wandering about the water front of San Diego, I had heard many tales of this out-of-the-way island, which lies off the Mexican coast about 180 miles southwest of San Diego, and that I was now actually on my way to it was due to the courtesy of the Mexican government. I had been invited to join a party in charge of Prof. J. M. Gallegos, of the National Museum of Natural History, Mexico City, that was planning to visit the island. The voyage was made aboard the Mexican Fisheries Patrol Boat "Tecate," which started from San Diego on July 10, 1923, and, after touching at Ensenada, Lower California, set her course on the open Pacific.

After I had been watching for hours, far to the southwest a dim outline commenced to take shape about eight o'clock in the morning. Finally landmarks began to appear and these were pointed out to me by different members of the party who were familiar with the place. As I scanned the rocky slopes, I noticed that moving things were in evidence everywhere—for the island was swarming with goats! It appears that in the old whaling days goats were introduced on Guadalupe as a source of meat and have increased to such an extent that they now completely overrun it. At this season, when everything was dry, they were invading the sheer faces of the cliffs in search of some stray bit of lichen or moss on which to feed. We marveled at their agility and their ability to cling to the precipices—almost as tenaciously as a fly ascending a windowpane. However, their adventures were not without peril, for, while we were steaming slowly near the shore, searching for a suit-

¹Photographs by the author.

able anchorage, we saw several carcasses of goats floating in the water,—an evidence that the animals had fallen from the bluffs which overhang the sea.

Our anchorage was made within fifty yards of the east shore of the island, near the site of the old penal colony that is today occupied by a garrison of soldiers, placed there to guard the surviving elephant seals (*Mirounga angustirostris*), which inhabit a small beach on the opposite side of the island. These animals were brought to the very brink of extermination by the old whalers, who sought them for their oil, which before the days of petroleum was used extensively by the gold hunters of California for lighting. The small herd which exists on Guadalupe Island comprises the only representatives of this species now upon the earth. As a

result of a coöperative expedition made in the summer of 1922, this rugged island, which is only 20 miles long and 6 miles wide, was created a federal reserve by proclamation of the Mexican government.

It was with no little interest that we landed in the late afternoon. With another member of the party, I set out and explored a cañon for half a mile inland. A rocky, rugged waste it proved to be, with reeking carcasses of goats scattered about in various stages of decomposition. The narrow cañon was at times nearly stifling due to the heat of the reflected rocks, and there was no breeze to stir the air. We saw but two species of birds, the Guadalupe rock wren (*Salpinctes guadeloupensis*) and the Guadalupe house finch (*Carpodacus amplus*). Both these birds proved fairly abundant. They might be seen



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in a small flock or family searching for maggots in the carcass of some dead goat.

The eastern sky was cloudless next morning, and the sun rose in almost tropical splendor. Professor Gallegos and I were landed through the surf with our lunch, guns, and cameras, for this day had been designated as the one on which the top of the island was to be explored. A boy and pack burro were placed at our disposal by the commander of the garrison. As we gained altitude on the steep and rocky trail, a grand view of the northern end of the island was spread before us, while banks of fog were swept over the northern head by the incessant western winds.

On reaching the floor of a small valley, I was much impressed by its desolation. Not even a spear of dry grass was to be found among the rocks, and only one or two green bushes could be seen hanging by their strong roots from crevices in precipitous cliffs—out of the reach of the ravenous goats. Though safe from destruction, these bushes were not unobserved, for well-traveled goat trails led to the cliffs both above and below them, where the shaggy beasts had evidently been feasting with their eyes if not with their teeth. About half a mile from the spring, which is situated on the eastern slope of the island near the summit, was found what had been part of Guadalupe's beautiful cypress forest, but which consisted now only of dried, naked tree trunks. This was another result of the ravages of the ubiquitous goats; for when the season of the annual grasses has passed each year, the beasts resort to the bark on the trees, and are fast devastating the small forests which crown the island.

Arriving at the spring, we quenched

our thirst at a pool that had been safely fenced from pollution and were pleasantly surprised at the quality of the water. A question that naturally occurred was why the spring should be located so near the crest of the high slopes. Investigation of the rock strata told the story. The water came from the forests above, on the westward slope of the island, which were continually drenched in fog. The moisture, condensing and dripping to the ground from the leaves of the trees, is concentrated by strata of hard rock which slope gently through to this point on the eastern side of the island. These strata are impervious to water, and thus carry the moisture to the outcropping where the spring occurs. Through this agency alone is life able to exist on this desolate island. Eventually the goats themselves will be their own undoing, for with the passing of the forests—which is inevitable—the water supply will also cease to be, and with it will disappear the terrestrial life on the island.

Of ten species of birds and mammals which have been recorded as endemic on this island,—namely the Guadalupe fur seal (*Arctocephalus townsendi*), the Guadalupe wren (*Thryomanes brevicauda*), the Guadalupe towhee (*Pipilo consobrinus*), the Guadalupe caracara (*Polyborus lutosus*), the Guadalupe flicker (*Colaptes rufipileus*), the Guadalupe petrel (*Oceanodroma macrodactyla*), the Guadalupe rock wren (*Salpinctes guadeloupensis*), the Guadalupe house finch (*Carpodacus amplus*), the Guadalupe junco (*Junco insularis*), and the dusky kinglet (*Regulus calendula obscurus*),—the five first named are now gone forever. The goats are responsible for the passing of three of these—the Guadalupe towhee, Guadalupe wren, and Guadalupe caracara. The



If many dry years reduce the annual growth on the island to a minimum, there will be little left of the forests, for the goats gnaw the very bark from the trees, and even climb to the more accessible limbs

towhee and wren were exterminated by the complete destruction of the underbrush by the goats. The caracaras preyed upon the new-born kids and were destroyed by the men who had been granted the concession of exploiting these animals for their hides and tallow, for they thought the birds were limiting the increase of the goats. Thus, indirectly, the goats caused the extermination of the caracara. The flicker was brought to its doom by the introduction of house cats by the early Russian sealers, who also introduced the common house mouse (*Mus musculus musculus*). Both of these animals, in addition to the goats, have run feral over the island, causing untold destruction to the birds and plants. A glance at the barren landscape and

bleak, leafless skeletons of the cypress trees through which we passed was sufficient to impress upon us the fact that the end is near for what Dr. Edward Palmer in the seventies described as a naturalist's paradise.

After lunch Professor Gallegos and the pack boy went on to the top of the island to collect specimens of the cypress and take photographs, while I stayed about the spring to observe the birds. I later joined them near the summit and had opportunity for a hasty glance through the forest and for the making of a few pictures. I was much impressed by the appearance presented by the cypresses, for dead, leafless limbs hung to the ground in a thick, inter-locking mass and the goats had tunneled through these masses,

much as meadow mice tunnel in a grassy swamp. In places I saw evidence that the goats had adopted even arboreal tactics, and had climbed well into the trees to gnaw away the bark. Dripping with cypress pitch, the trees presented a sad sight, for their very life blood was oozing away. Nothing but old trees were found in this forest, for the hungry goats do not allow the seeds to sprout. It remains only for the now-existing trees to live out their lives, when this species also will pass away on Guadalupe.

As we made our journey downward in the cool of the late afternoon, goats were seen everywhere journeying toward the spring—from the north, the south, and all directions. I fired my gun toward one large flock to frighten the animals, and they scurried off across the precipitous gullies and were soon out of sight.

At daybreak the next morning we set sail for the beach on the northwest part of the island, where the elephant seals are to be found. As we were approaching toward the north head in the lee of the island, the wind ripped through gaps in the crest and descended in what is known to the mariner as "woolies." Several of these were so violent that the awning on the after-deck of the boat had to be furled, and at times I thought the very rigging would be torn from the masts. After we had passed from the shelter of the island, we were met by a veritable gale and a frothing, heaving sea, which dashed over the ship, causing all of us to seek a seat of safety with a convenient handhold. We were sailing close to the rocky coast, and the towering cliffs, rising like spires into the sky, made an impressive scene. The fog had risen and, as we passed along, we were able to see the summit of the

island in its entirety. Now, for the first time, though at a distance, I beheld the rugged pines in their stronghold, struggling for existence on the brink of the precipitous cliffs. Their wind-swept limbs were all stretching to the eastward, for the prevailing western winds would scarcely permit a leaf to face them. The small endemic palms were also noted, fighting for life against the elements and the goats, on the sheltered slopes wherever their existence was possible. Goats were seen everywhere and occasionally a sudden cloud of dust would rise from the faces of the cliffs where, frightened at our approach, the animals had, in the haste of their departure, started an avalanche of stones toward the sea.

After we had passed well around to the western side of the island, the sea became reasonably quiet and we all began peering at the shoreline in search of elephant seals. Those of the party who were acquainted with the place called my attention to a loud snorting, which sounded plainly from the shore though we were fully half a mile away. This noise, I was told, was made by the elephant seals.

The long-awaited cove was soon reached and its short, sandy beach seemed covered with the huge beasts. I could hardly wait while the anchor was dropped and the skiff got ready. It required a bit of skilled seamanship to make a safe landing, for the breakers on the west side of the island were swept shoreward violently by the western wind. Once on the beach, I found myself face to face with the huge creatures of the sea. It was with a great deal of timidity at first that I walked in their midst, but I finally ventured to pat one enormous fellow as he lay dozing in the mellow heat of the sun. It amazed me to find that



AN ELEPHANT SEAL THROWING COOLING SAND OVER HIS BACK

rolled lazily in the swelling waves, while the other ambled back to his place on the beach.

Our work on the seal beach being finished, we again returned to our anchorage on the eastern shore and the following morning set sail to the southward, steaming as close to the island as possible in the hope that a last remaining Guadalupe fur seal (*Arctocephalus townsendi*) might be discovered. How bleak and barren the landscape appeared as we moved slowly along just beyond the reach of the breakers! Hardly any bird or animal life, excepting goats, was seen, though an occasional dark-mantled western gull (*Larus occidentalis livens*) or Farallon cormorant (*Phalacrocorax auritus albociliatus*) was observed, and a single California sea lion (*Zalophus californianus*) was seen basking in the sunshine on the top of a rock near the water. The tide was low at this morning hour and many flocks of goats were observed at the water's edge nibbling at the kelp. So scarce is food for them on the island that they descend during low tides to feast upon the kelp and they no doubt quench their thirst with salt water. From our vantage point on board ship we were able to study the geological formation of the island. In many places could be seen large craters surrounded by black streams of cold lava that had once been belched forth red-hot from the earth. One area was of cinder red color, as though still aglow with the fiery heat which marked the birth of this island.

Upon rounding the southern end of the island, we saw to our surprise a United States Eagle Boat lying at anchor with the Stars and Stripes floating above the taffrail. As we passed almost within hailing distance,

each national emblem was dipped in honor of the other. We proceeded to an anchorage in the quiet waters of South Bay, on the shores of which we found a party of bluejackets with the commanding officer of the Eagle Boat hunting goats to stock their larder. On our cruise around the island we had planned to spend the night at this anchorage, going up the western coast in the morning. There we intended to capture a couple of the smaller elephant seals and to bring them back alive—one for the Zoological Garden in San Diego and the other for Mexico City. Our visit to the seal beach had sadly shaken our hopes of being able to cope with or carry even the smallest of the seals we had observed in the herd. However, when we talked with the commander of the Eagle Boat and found that it was possible to obtain the help of twenty or thirty energetic sailor boys and a vessel of good displacement to bring back the captive seals, our expectations were again revived.

Two fair-sized islets mark the southern end of Guadalupe Island, and as soon as we had rounded these, we were again buffeted by the west winds. How the boat pitched and rocked in this turbulent sea! At times the sweeping spray passed clear over our ship, wetting the decks and everyone on them. During the four-hour journey up the western shore of the island, the Eagle Boat and our craft went bow to bow, and the only event of natural history interest on our journey was the flushing of a few pairs of Xantus' murrelets (*Endomychura hypoleuca*).

We landed at the seal beach and were soon followed by a dozen or more lusty bluejackets in their whaleboat. Theirs was the fiery enthusiasm of



When teased, the seals would open their cavernous mouths and act as though they would like to devour the aggressor with one gulp



It takes more than a single elephant seal to beat a detail of young naval reservists provided they have tackle enough

youth, and action was what they wanted. Accordingly the seals were quickly scattered and driven into the sea when once these boys started to work in their midst. Selecting one of the smallest seals, they tangled him in a large rope cargo net, which was then lashed to a broken oar and carried to the whaleboat. As there was not enough tackle to cope with the second animal, the bluejackets departed from the beach with only one captive.

After all hands were again safely on board, each ship blew three blasts of the whistle as a farewell. The Eagle Boat put out to sea for San Diego and our ship went back to its anchorage near the garrison. Here we spent the night, and departed the next day at noon for Ensenada on our way home. Thus ended the trip of my boyhood dreams to the isle of Guadalupe, and, though there were disappointments, my pleasures were many.



The queer proboscis from which the elephant seal derives its name is here seen to good advantage